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SPEECH

OF

HON. ELIJAH WARD, OF N. Y.

DELIVERED IN THE HOUSE OF REPRESENTATIVES, FEBRUARY 15, 1859.

The House being in the Committee of the Whole on the state of the Union—

Mr. WARD said:

Mr. CHAIRMAN: Having the honor to represent in this honorable body a constituency vitally interested in the progress of commerce, an element which has enabled our country to attain a high rank among the nations of the world, and to which we must be chiefly indebted in the future for its further growth and increased power, I feel a deep interest in all subjects which seem likely to aid in the development of our commercial greatness, and in maintaining the supremacy which we are rapidly acquiring.

Our vast extent of territory, its fertility, mineral and other resources, the energy of the people, and the great amount of capital employed, are powerful levers in advancing the prosperity of the country; but the history of the past demonstrates that no one element has had so great an influence in the extension of commerce, and contributed so largely to our national wealth, as increased facilities for annihilating space and time by means of railroads and canal communications. The utility and importance of these modes of transportation have been fully tested. Railroads are of comparatively recent origin, their introduction not exceeding twenty-seven years since. Within that period England has expended £300,000,000 sterling, and the United States $1,070,000,000, in constructing railroads. Canals attracted the attention of the ancients. The best authenticated accounts of ancient Egypt represent "that country intersected by canals conveying the waters of the Nile to the more distant parts of the country, partly for the purposes of irrigation and partly for navigation. The efforts made by the old Egyptian monarchs and by the Ptolemies to construct a canal between the Red sea and the Nile are well known, and evince the high sense which they entertained of the importance of this species of communication."* This work was intended for a ship canal to connect the Red sea with the Mediterranean. This locality is now attracting public attention, and the route has been examined and surveyed and found to present no difficulty that cannot be removed. The French projectors of the Suez canal contemplate its reopening, or the construction of a parallel line connecting the two seas, which, if carried into effect, would be of great benefit to commerce. Canals have been constructed in Italy, France, Holland, Denmark, Sweden, England and other countries; but it was reserved for the State of New York to excel all other

* Ameilhon Commerce des Egyptiens.

T. McGill, printer.

Powers in connecting the waters of the Hudson with Lake Erie, by means of the Erie canal.

My associations with mercantile men, my residence in the commercial metropolis, have long since induced me to examine with the greatest attention projects that proposed to develop intercommunication. The construction of canals in the several States, of lines of railroads leading to all parts of the country, the introduction of our steam marine and the many lines of clipper and other sailing ships, induce me to believe that much more may be done beneficially in this direction. Boston, New York, Philadelphia, Baltimore, Charleston, and the other sea-coast cities and towns, as well as those in the interior, attest the benefits of railroads and canals, interlinking and binding the Union by ligaments of a common interest too strong to be severed. Appreciating the advantages to the country that result from the home and foreign trade, it becomes important to facilitate that trade in every proper manner.

With a view to increase commercial intercourse, by diminishing the traveling distance from the Atlantic to the Pacific ports, the subject of a ship canal is assuming an importance commensurate with its merits. No project of higher moment or greater magnitude has been presented to the country.

"When in 1513, Vasco Nuñez first beheld, from the heights of Darien, the shores of the Pacific, its near proximity to the Atlantic could not fail to render evident the importance of a water communication between the two oceans. Long and vainly did the Spaniards seek for a natural channel, which might facilitate their passage to the Indies, and when forced to abandon all hope in its existence, they continually directed their attention to the best means of opening an artificial way. The great utility of such an undertaking became still more evident towards the latter part of the eighteenth century, which witnessed the rising importance of Hindostan, of China, and of the islands of the Indian ocean, as well as the discovery of Australia, and the numerous islands of the Pacific. The length of time required, and the danger incurred, in doubling the two tempestuous capes, by which alone the passage could be effected, served continually to keep attention fixed on the inestimable advantages which would accrue from an inter-oceanic communication. Various points of Central America were therefore surveyed, and plans were proposed for executing this most desirable enterprize; but the difficulties to be overcome appeared almost insurmountable, and most of the projects have been tacitly abandoned.

"But within the last few years, the acquisition of California by the United States, and the commercial activity which resulted from the working of the gold fields, so immediately followed by a similar discovery of the precious metal in Australia, and the consequent rapid development of trade with that continent; the extension of commercial enterprise throughout the whole of the Pacific and the Indian oceans; all concur in rendering the realization of this project indispensable."*

If a passage through the isthmus can be made, thousands of ships and vessels of all classes with their cargoes would pass through it from and to every clime; it would save thousands of miles in sailing distance, weeks and months of time, and the difficulties and dangers of the Capes of Good Hope and the Horn be avoided. It would open to our merchants new fields for enterprise and rich markets for their wares and the various productions of the country.

It has been carefully estimated that fourteen thousand miles between New York and San Francisco, and ten thousand miles to China, India, Japan, and the Sandwich Islands, British Australia, the Dutch, English and French East Indies, New Zealand, the Russian American possessions,

* Kelley's paper, read before the Institute of Civil Engineers, London, 1855.

the coasts of Central America on the Pacific, Chili and Peru, or nearly in this ratio, may be saved on every outward voyage our ships make, and the same distance on the return. The attainment of such great results would give an extraordinary impulse to the commerce of the United States and other nations.

Mr. Chairman, from the time of the discovery of this continent, a short passage to the East has been constantly desired; a region Columbus was seeking for when he discovered the New World. The commercial history of the past shows that whatever country has hitherto controlled the trade of the East, has invariably held, for the time being, the greatest commercial power in the world. In ancient times, Carthage and Alexandria controlled the trade of the land of spices and frankincense. Venice owed her splendor and commercial rule to the same cause. At a later day, when the discovery of the passage by the Cape of Good Hope had been made by the Portuguese, they held the key to the East. The trade with India in silks, fine cottons, linens, spices, and myrrh, gave to Portugal such a supremacy in Europe, that her rival, Spain, fitted out the expedition which bore the discoverer of this continent to our shores. It did not result in the discovery of the passage so ardently desired, and there was almost as much disappointment felt that a way to India was not found, as there was joy at the discovery of America.

When the Dutch, half a century or more later, (Prescott and Helpes,) secured a portion of the Indian trade, they, too, reaped the benefits and shared in the immense gains. Subsequently England disputed with Portugal and Holland for this trade; fierce and bloody wars were waged; and history now records the unrivaled extent of English commerce, which has vastly contributed to her power. During the last few years we have been disputing with her for this trade, and we have in part succeeded; but if we desire further gains in this respect, we must place ourselves in a central geographical position by making a passage through the isthmus.

Nations have made great sacrifices to secure the benefits of this commerce. The most recent illustrations may be found in the late Russian war, which, stripped of its pretended objects, and the varied phases of diplomacy, may be regarded as a struggle for the control in the Indies and the trade of that country; for, by possessing Constantinople, Russia would have had a transit by the peninsular to the Persian gulf and the Red sea, and thence, by channels of communication now open, into the Indian ocean.

Mr. Chairman, it appears to me that no one, familiar with the subject and the sources of commercial strength and power, can justly doubt the importance and utility of an inter-oceanic communication, by means of a ship-canal. The main point to be determined is, whether it is feasible; has any route been discovered that science, skill, and energy, can overcome, within such a cost as to make its prosecution and completion practicable? While the subject has occupied attention for several generations, more recent elaborate explorations and surveys indicate only five or six routes as at all practicable. In this connection, engineering problems are not so difficult of solution, as to obtain the capital required in the experiments and accomplishment. The routes to which public attention has

been drawn are: 1. Tehuantepec; 2. Honduras; 3. Nicaragua; 4. Panama; 5. San Miguel; 6. Chipo; and 7. The Atrato.

In examining the several routes, my attention has been particularly attracted to the Atrato for its practicability; and more especially, because it can be constructed without locks, and at much less cost, for the same sized canal, than at any other point. These routes I propose briefly to examine.

1. The Tehauntepec route commences on the Bay of Vera Cruz, in longitude 21° from Washington, and, crossing the dividing ranges of the water sheds of the continent, extends to the Puebla of Tehauntepec, on the Pacific. The distance is one hundred and eighty-six miles, and the summit level at the pass of Nisi Correjor is eight hundred and fifty-five above the level of the sea. The topographical features of the country are a great general slope from the sea, on either side, to the summit, which is nearer to the Pacific than to the Atlantic.

No water exists at a sufficient elevation to operate a canal with locks, even if locks were not objectionable, as they are, where they can be dispensed with; and to make an open cut from sea to sea would cost, as nearly as I have been able to learn, over a thousand million dollars.

The data upon which my conclusions are founded was collected by the Government engineers. This line, although favorable for a railroad—a point which I do not question—still is not, in my judgment, adapted for a ship-canal. Since accurate surveys were made, its practicability, I believe, has not been urged.

2. The Honduras line lies eastward of the Balize, and runs in nearly a southerly direction across the isthmus known as Baya Honda, from Puerto Cabella to Fonseca. The length of the route is one hundred and sixty miles, and the summit level is two thousand six hundred and eighty-one feet above the sea. Notwithstanding, the rivers Humuya and Goascoran interlock, and their head waters pass one another; still the supply of water is insufficient, and the great height of the summit would require at least one hundred and sixty locks of great magnitude, and very costly. I therefore consider this line out of the question for canalization; for a railroad it is practicable.

3. Nicaragua. This route has been very much discussed, and in point of desirability for a water communication between the oceans, is undoubtedly next best to the Atrato, but is much inferior to it, for the reasons which I will hereafter present. At this place an elevation of one hundred and twenty-two feet has to be overcome, and, according to the most approved plans, at least thirty locks would be necessary. Water here is abundant on the summit, and at the Atlantic terminus there is a good harbor; but on the Pacific a harbor must be constructed at Breto, or in that vicinity, in order to make the communication complete.

If the use of locks was not greatly disadvantageous, the Nicaragua line would claim our warmest support; but the difficulty and danger of elevating great ships to the height of one hundred and twenty-two feet, and then lowering them again every time a passage is to be made from one ocean to another, must be apparent. Locks offer serious objection to such navigation; each lock of a canal is nearly similar to a dry dock, and

thirty would have to be passed each way: in addition, there is the difficulty and uncertainty attending the use of locks, arising from the failure of the gates that inclose them, which, in this case, would number one hundred and twenty, if the locks were single lifts, which are most desirable. The cost of keeping such mechanical structures in repair would be great. The risk arising to vessels from striking against them is to be regarded, and the probability of occasional delay in them, when out of repair, is to be taken into consideration.

At Nicaragua, the cost of constructing a work equal in width and depth, would be more than at the Atrato. I am aware that plans have been made, the estimated cost of which would be less than is contemplated at the Atrato; but these plans propose a canal of much less depth and width, and insufficient to do the trade required. I am confident, from the estimates that have been made—and I speak from a knowledge of the case—that the same sized canal, even with locks, which would materially reduce its working capacity, cannot be built at Nicaragua for the same price as at the Atrato.

4. Panama route. Upon this line a railroad is now in successful operation. It is undoubtedly one of the most desirable lines, if not the best route, for a railroad crossing the Isthmus; it is but forty-seven and a half miles long, and good harbors exist at either end. But for the purposes of a canal, its disadvantages may be summed up in a few words. Forty-two miles must be canalized; ships must be lifted two hundred and fifty-seven feet. At this elevation there is not sufficient water to feed the canal, and water must be collected in reservoirs in the mountains, and brought sixty-one miles through a trench of more than one hundred and fifty feet deep. Even then, thirty-six locks would be required. If an open cut is attempted, the quantity of material to be removed would be equal to over three times what is necessary at the Atrato, and a lock on the Pacific would be indispensable.

5. San Miguel. There have been various explorations made at San Miguel under the directions of the engineers of the Government of the United States, Great Britain, Spain, and Holland; but no line at all proper for a ship-canal has yet been discovered.

6. Chipo. This route has only been surveyed on the Atlantic coast; and the range of mountains (Cordilleras) seem to render it not available for the purpose of a ship-canal at this point.

7. The Atrato. This proposed canal is through an open cut from the sea to the waters of a navigable river, having sufficient depth to float the largest man-of-war and merchant ships; and no locks or other impediments are required.

This route that I have reference to, lies in the Republic of New Granada, in the province of Choco, and may be found between the seventh and eighth degrees of north latitude, and the seventy-seventh and seventy-eighth degrees of west longitude from Greenwich. It begins at a good harbor at the mouths of the Atrato river, in the Bay of Candilaria, thence ascends the Atrato river to one of its affluents.

In the early part of the present century, the venerable and remarkably far-sighted Baron Alexander Von Humboldt, in his "Essays Politique,"

in describing the various routes that probably existed for forming inter-oceanic navigation, designated the line of the valley of the Atrato river, as worthy of particular consideration. Humboldt came to this conclusion at that early period, from having personally examined this and the other proposed routes; and in his various writings, he urges the merits of this particular line. The transits at Honduras and Tehuantepec, the canoe navigation at the lake Nicaragua, and the mule path at Panama, however, for many years drew off the attention of commercial men and capitalists, from the Atrato.

In 1850, General T. DeMosquera, ex-President of the country, in a work entitled, "Physical and Political Geography of New Granada," drew attention again to the valley of the Atrato, and a citizen of the State of New York, (Mr. Frederick M. Kelley,) perceiving the vast benefits to be derived to his own city, the country, and the world, from any good route across the Isthmus, but more particularly from any that could be made available for purposes of canalization, learning the views of Humboldt, and all that Mosquera could inform him relative to this locality, determined in 1853, as a mere matter of public utility, and without any immediate hope of personal advantage, with scarcely the remotest prospect of self-aggrandizement, to fit out an expedition at his own expense, and have surveys made, to see if the impressions of the illustrious men I have named, were founded in fact or otherwise.

The first surveys were made up the river Atrato and over the dividing isthmus, and down the river San Juan, upon the line of a small canoe canal, more properly a ditch, that the priests of the mission of San Puebla had caused the natives to dig, many years ago, and through which canoes laden with the gold and merchandise of the surrounding countries passed, at times, at high water, from one ocean to the other. This line did not present such favorable features as were anticipated; but, nothing daunted, three other expeditions, making four in all up to that period, were fitted out with praiseworthy zeal, by the same individual. They, however, all merely added to our geographical knowledge of this highly interesting portion of our continent.

The fourth expedition, at nearly the close of the third year of the researches, gave some slight promise of success, having learned from the traditions of the natives, that low ground existed near the seventy-seventh parallel; but owing to circumstances they would not control, they were compelled to return without making any very important discoveries. The data they furnished, however, was the key to future success.

Another expedition was started and intrusted to an experienced explorer, with directions to search in the vicinity of the locality before indicated as practicable. The dense growth of underbrush, and the gigantic forests that cover the entire face of the country, made the work of exploration tedious and difficult; but after an absence of several months the party returned with the tidings that a route had been discovered and surveyed, by which a canal could be built, to connect the waters of the Atlantic and Pacific oceans without locks, and at such a cost as to be commercially available. No speculations, however, were gone into; sober, serious reflection seemed to indicate that, before any public demonstration

was made, the surveys should be verified by a Government corps. Years had been occupied, and a large amount of money expended by a private individual to solve this great problem. The surveys being completed, Mr. Kelley proceeded to Europe with the result. I ask, to submit, in his own language, his reception abroad. He says:

"I went to England, and submitted my plans and reports to the Royal Geographical Society of London, and to the British Institution of Civil Engineers. I invited the searching criticism of those most competent to judge in the mother country. I went to France, and, knowing how deep an interest the Emperor Napoleon had taken in the promotion of similar enterprises, and how profound a knowledge he had displayed of the general subject, at a time when correct views were confined to a very limited circle, I laid my plans and surveys before his Imperial Majesty, and invited to their consideration, in the most public manner, the highest science in the service of the Government and people of France. I went to Berlin, and frankly explained to that illustrious sage, the pioneer of all scientific knowledge of Central America, the general views which I entertained, and the nature of the evidence by which they had been confirmed. In those three enlightened countries I was not treated as a stranger. There was a grandeur in the design of which I was the bearer, a dignity in the mission with which I was charged, that won for me courtesies, which, on mere personal grounds, no stranger, going to Europe for the first time, could have anticipated or claimed. From the Emperor of the French, from Lord Clarendon, from Sir Roderick Murchison, from Baron Humboldt, from Rear-Admiral Beechy, from Robert Stephenson, Admiral Fitzroy, and the members generally of the Royal Society and Institute, I received great kindness; and, what was of more importance, they applied to my plans and reports, in a catholic and courteous spirit, but with the rigid exactness due to science and their own high reputations, those tests suggested and fortified by their great experience. A friendless and unknown American citizen was treated by these men as though he was a brother, not because he was eminent in science, but because they recognized in him the zeal, the prophetic hope and self-devotion which are ever the handmaids of science."*

The important results thus far attained were brought to the attention of the Thirty-Fourth Congress at its second session. Appreciating the efforts made, and the great results to flow from interoceanic communication, an appropriation was made by this Government for a verification of the surveys to which I have alluded. Congress authorized the Secretaries of War and the Navy, under direction of the President, to detail officers for the survey and have the verification made. The Navy Department selected Lieutenant Craven, and the War Department detailed Lieutenant Michler, of the topographical engineers. These officers, upon their return, proceeded to prepare their reports; and the result of the expedition will probably be laid before Congress at the present session. While I am not able to give the detail of the survey, I am sufficiently informed to state that their reports will confirm the physical facts as represented, including harbors, rivers, rock and earth excavation, and the general character and quantity of material to be removed to form the canal, upon which the former estimate of the cost of this work was based. This estimate of cost had been computed by several experienced engineers in this country.

By the proceedings of the institution of engineers of London for 1858, I find that body—perhaps as competent as any in the world to judge—indorses the estimates made by our own engineers. I have also seen the written expressions of many able and intelligent American engineers on the subject; letters from distinguished engineers—Robert Stephenson, George Rennie, and other English and French engineers of eminence, verifying the estimates made for the work in this country. In April and

* Kelley's Atrato Ship-Canal Pamphlet.

May, 1856, the Royal Geographical Society, at Mr. Kelley's request, discussed this question at great length, and took very decided ground in favor of the work being done. The President, who was Minister to England while Mr. Kelley was abroad, did all in his power to advance this great measure, and suggested the application to the United States for verification. The French Emperor also appointed a commission to examine the plans and surveys, and they reported favorably to him, who, I learn, expressed a willingness to unite with England and the United States in building the canal. The plans were submitted to Baron Humboldt, and his approval obtained.

Mr. Chairman, having drawn the attention of this honorable body to the subject of ship canals, briefly referred to the various projects, and given a rapid sketch of the Atrato, I would now refer to the benefit which the commerce of this country and other nations will derive from such a channel of communication from the Atlantic to the Pacific oceans. I have already alluded to the great saving in traveling distance, and refer to the appendix for the detail. The first influence felt would be from the supply of a colony of workmen, consuming the breadstuffs, manufactures, tobacco, and other products of the United States, during the construction of the work.

I find, by official statistics, that the total tonnage owned by the United States, that would use this canal, if constructed, is 1,857,485 tons. The cargoes are valued at $100,294,687, and the ships at $92,874,250; making a total amount of value afloat, belonging to the United States, of $193,-168,937. This includes the whale fishery, but not the precious metals from California. Taking the diminution of time as a basis, the benefit by the gain in sailing distance from one part of the world to the other by the Atrato canal, estimating the saving of insurance, interest on money, wages of men, freight, wear and tear, it appears that the sum of $35,995,930 would be saved to the United States alone, as follows:

Table showing the saving in money to the trade of the United States that would result from the use of the Atrato canal, according to the official statistics for the year 1857.

Insurance an vessels and cargoes saved	$3,863,378
Interest saved on cargoes	3,008,840
Saving of wear and tear of ships, five per cent	4,643,712
Saving of freight-money (by time)	11,250,000
Saving of wages, provisions, crew, &c	13,230,000
Total yearly saving to the United States	$35,995,930

Should the United States assume to pay the whole interest on the work, during its progress and completion, the amount thus saved to the commerce of the country in one year exceeds, by $8,500,000, the entire sum that would be required to be paid in twelve years, or seventeen times the average annual payment. If England and France unite, it is over forty times the annual sum that would be required.

We find the tonnage of England, that would pass this canal, is 1,029,-295 tons; the value of tonnage and trade is $190,649,750. The saving to England, upon the foregoing basis, would be $9,950,348, as follows:

Table showing the yearly saving in money to the trade of England, as ascertained by the official returns for 1856, *if the trade went through the Atrato canal, instead of round the Capes.*

Insurance on vessels and cargoes	$1,906,495
Interest on cargoes	1,858,826
Saving of wear and tear of ships	2,573,237
Saving of wages, provisions, finding, &c	3,611,790
Total	$9,950,348

The tonnage of France that would pass the Atrato, is 162,735 tons; the tonnage and trade is valued at $67,210,609; the saving to France would be as follows:

Table, showing the saving in money to the trade of France that would result from the use of the Atrato canal, according to the official statistics for the year 1857.

Insurance on vessels and cargoes	$753,000
Interest saved on cargoes	452,084
Saving of wear and tear of ships	325,470
Saving of freight-money estimated by time	276,949
Saving of wages, provisions, and outfit of ships	376,427
Total yearly saving to France	$2,183,930

Of countries other than those named—the value of the trade and tonnage that would pass this communication is 16,802,000 tons; the saving would be about $1,400,000.

The aggregate of the foregoing tonnage and trade is $467,831,296; and the total saving is $49,530,208 annually.

These statements are predicated upon the present state of commerce. The average increase for the last ten years was about one hundred and ten per cent., and it is fair to assume that the trade will increase one hundred per cent. in the next ten years, in which case it is estimated the saving to the world would be $99,060,416.

Having included the trade in aggregate form, it is perhaps proper to say that there are many specific interests that would be greatly benefited. It is believed that the whaling fleet, for example, could go into the fishing grounds, and return with as much oil and bone as they do now in two-thirds of the time, and the coasting vessels of New England and the north-east could find employment in the Pacific, during the seasons they are now idle, procuring guano, &c.

Notwithstanding the vast benefits that would be secured to commerce, it might be urged that the Government, in addition, should have some direct benefit. In answer to this, in rendering the aid required, Congress could provide that all national vessels and munitions of war should pass free of charge for a certain period.

In transporting heavy merchandise (which is about ninety-one hundreths of all the trade) across the Isthmus, the canal can only be resorted to on account of economy; railroad communication being too costly, besides the difficulty in unloading and loading. The charge for transporting a ship and cargo of one thousand tons by the canal would not probably equal the twenty-fifth part of what the cargo would cost by railroad.

If, instead of constructing a canal, it was determined to build railroads across the Isthmus, it would be found that there is not only a want of

room to build them upon, but that it would require twenty roads, each of them equal in capacity to the Panama road, to be capable of doing the business of the canal; these twenty roads, if built, would cost, at least, double as much as the canal, and could not be kept in order for many times as much as would be required for the canal.

Independently of the risk and expense of loading and unloading, the cost of transportation by railroad in that country is nearly forty-five times as much as it would be by canal; or in other words, the canal can do the entire freighting trade of the world in this direction, pay an interest on the cost and the interest sunk during construction, and maintain and operate itself for $8,140,000 per annum. To do the business by railroad that the canal could do at this cost, at the prices now paid to the railroad, would amount to $360,000,000.

I would next invite your attention, and that of this honorable body, to another branch of the subject; which is, the physical advantages of this route as compared with all others for communication between the oceans.

When it shall have been determined that any road, railroad, or canal, is necessary in any direction, our next duty is to decide which will be most useful, and, in connection with the expense to be incurred, involving and evolving one question with the other, to settle its final place. Many situations are alone suited for wagon roads, and these are ample and sufficient for the wants of the Government and the country they accommodate. Other places, again, require more rapid communication, and a greater amount of tonnage is expected to pass over them. Here it is proper to employ the facilities afforded by modern science, and construct railroads or canals. If swiftness of movement, as in the case of passengers and mails, is desirable, then railroads should be preferred. If the commodities to be moved are heavy, and water-carriage can be employed, more particularly where a part of the journey is performed in ships from the necessities of the case, it is advisable to make a canal, more especially if the goods can be carried, ship and all, through without handling, so as to avoid the process of loading or unloading. If goods could be conveyed to our inland cities in the same ships that cross the ocean, with their cargoes on board, no one would desire to unload them into a canal-boat, or on to a railroad. These considerations become elements in the process of reasoning by which we should decide what method is best adapted to carry on our enormous and constantly-increasing business between the two great oceans of the world. If equal advantages exist for loading and unloading, and water is abundantly deep, no commercial man would prefer his goods unloaded from his ship fifty miles from the entrepot, and brought by wagon or railroad to his warehouse, when his ship could as well come to the wharf at his door. The same rule would govern in crossing the Isthmus.

The estimated cost of this project is $73,687,141. (See appendix.) It is evident that a work of this magnitude can only be completed by the aid of the Government, as a means for postal facilities, and for the transportation of military and naval stores. It is estimated that it will require at least nine years to complete it. To raise the requisite means, it is proposed that the United States should guaranty to pay interest at the rate of five per

cent. upon the amount expended in the process of the work, from year to year, for the period of twelve years. The amounts in each, annually, would be as follows:

First year	$150,000
Second year	400,000
Third year	800,000
Fourth year	1,250,000
Fifth year	1,700,000
Sixth year	2,150,000
Seventh year	2,600,000
Eighth year	3,150,000
Ninth year	3,750,000
Tenth year	3,750,000
Eleventh year	3,750,000
Twelfth year	3,750,000
Total interest money	$27,200,000

The above is based upon the supposition that this Government is the sole promoter. In case England and France joined, it would be for one-third the amount. The interest being guarantied by the United States, or in conjunction with England and France, it is believed that those engaged in the construction of the canal would be able to obtain the money necessary for their object upon the most favorable terms.

The estimated cost of this great work, I am prepared to admit, is a large sum; but this estimate is founded upon the actual cost of doing the same kind of work in the same kind of a country, and is based upon the amount of cubic yards of rock and earth to be excavated, and dredging to be done, and is no theoretical hypothesis of something yet never undertaken.

The cost of this canal, Mr. Chairman, is predicated on a depth of thirty feet at low water, and one hundred feet wide. It is maintained that this is ample and sufficient to pass the largest vessel afloat. There is scarcely a harbor that admits vessels drawing over thirty feet of water; the great commercial marts of this continent, Europe and Asia, do not allow vessels of this draft to enter, or at least do not allow those drawing more to pass over their bars, hence ships are not built of more draft than this when loaded; but as the harbors of the world mostly used do permit vessels of twenty-eight or twenty-nine feet draft to enter, it is deemed best to make the canal, at low water, as deep as the deepest harbors. In width, it is proposed that it shall be, as I before said, one hundred feet wide; this will pass abreast two of the large-sized merchantmen, with their yards clewed back, but not two of the largest steamers, because of the width of their guards and wheel-houses; these steamers must pass by signals, singly, in each direction, through the rock cut. Up the Atrato river, any sized vessel, and three or four together, can pass one another, so that there would be little or no detention from any of larger size, as the wide part extends for more than half the distance from ocean to ocean.

No attempt whatever has been made to under-estimate the cost, or to keep from the public the information upon which the calculations are based. If, however, it is not in all respects correctly estimated, a per-

centage of five or ten per cent. of error in the calculation would not alter our position. This canal would be a sound and proper investment for the country to make, at $75,000,000, in the manner proposed; and, if necessary, at twice that amount.

In furtherance of the work, the Government of New Granada has not only given all proper facilities to the private and Government engineers that conducted the explorations; but it has, by a formal concession, under proper restrictions, given the right to construct, maintain, and operate the canal forever, accompanying this grant with various desirable privileges extended to those that may undertake the work. The State of New York has also granted a special charter, under which a company may be organized to build the canal.

Mr. Chairman, I have merely presented some prominent points bearing on this interesting subject. It is too vast in all its details to be discussed under the rule of this House. I present it to this honorable body as worthy of its most serious consideration.

The gentleman (Mr. Kelley) whose name is identified with this great work has quietly and unobtrusively, at a large individual expense, been endeavoring to solve the great problem of the age. He has brought this project to a position that invites the attention of not only our own country, but the whole world. I feel the deepest interest in this subject, in consequence of the great benefit, as I have shown, that is to flow to trade. The extension of commerce is not only important to national wealth, power, and prosperity, but is also the great lever which conquers and maintains peace and tends to bind the nations of the earth in perpetual amity.

APPENDIX.

Table of the saving in distance from New York to the following places by the Isthmus of Panama over the Cape routes.

From New York to—	Distance via Cape of Good Hope.	Distance via Cape Horn.	Distance via the Isthmus of Panama.	Saving in distance over the route by the Cape of Good Hope.	Saving in distance over the route by Cape Horn.
	Miles.	*Miles.*	*Miles.*	*Miles.*	*Miles.*
Calcutta	17,500	23,000	13,400	4,100	9,600
Canton	19,500	21,500	10,600	8,900	10,900
Shanghae	20,000	22,000	10,400	9,600	11,600
Valparaiso	–	12,900	4,800	–	8,100
Callao	–	13,500	3,500	–	10,000
Guayaquil	–	14,300	2,800	–	11,500
Panama	–	16,000	2,000	–	14,000
San Blas	–	17,800	3,800	–	14,000
Mazatlan	-	18,000	4,000	–	14,000
San Diego	–	18,500	4,500	–	14,000
San Francisco	–	19,000	5,000	–	14,000

Table showing the trade of the United States that would pass through the Atrato canal, if now finished, taken from the official returns of the year 1857.*

Countries traded with.	Exports and imports	Tonnage.
Russian North American possessions	$126,537	$5,735
Dutch East Indies	904,550	16,589
British Australia and New Zealand	4,728,083	52,105
British East Indies	11,744,151	177,121
French East Indies	98,432	3,665
Half of Mexico	9,601,063	34,673
Half of New Granada	5,375,354	131,708
Central America	425,081	36,599
Chili	6,645,634	63,749
Peru	716,679	193,131
Equador	48,979	1,979
Sandwich Islands	1,151,849	33,876
China	12,752,062	123,578
Other ports in Asia and Pacific	80,143	4,549
Whale fisheries	10,796,090	116,730
California to east United States†	35,000,000	861,698
Value of cargoes	100,294,687	1,857,485
Value of ships	92,874,250	at $50 per ton.
Total value of ships and cargoes	$193,168,937	$92,874,250

*Congressional Reports on Commerce and Navigation. †Exclusive of gold dust.

Whale ships and coasting vessels have been estimated generally throughout this appendix at $40 per ton. The United States and European commerce round the Capes is conducted in first class ships, which often cost $80 per ton; $50 have therefore been taken as the fair average value in the construction of this table, which does not include coasting trade.

Table showing the trade of England that would pass through the Atrato canal, if now finished, taken from the official returns for 1856.

Countries traded with.	Exports and imports	Tonnage.
Half of Mexico	$2,775,137	$11,833
Half of Central America	1,244,817	5,615
Half of New Granada	2,437,605	10,188
Chili	15,486,110	118,311
Peru	20,473,520	244,319
Equador	360,015	1,820
China (Outward only 40 days saved by canal.)	7,077,390	68,530
Java (Outward only 40 days saved by canal.)	3,821,410	16,003
Singapore (Outward only 40 days saved by canal.)	4,364,070	16,500
Australia and New Zealand	78,246,095	522,426
Sandwich Islands	520,560	1.950
California	2,378,105	11,800
Value of trade	139,184,834	1,029.295
Value of ships	51,464,750	at $50 per ton.
Total value trade and ships	$190,649,584	$51,464,750

Table showing the trade of France that would pass through the Atrato canal, if now finished, taken from the official returns for the year 1857.

Countries traded with.	Exports and imports	Tonnage.
Chili	$10.000,000	$25,688
Peru	13,160,000	35,096
Half of Mexico	2,790,000	10,004
Half of New Granada	1,090,000	2,389
Equador	440,000	1,651
Bolivia	100,000	1,000
California	2,073,859	8,997
China (Outward only.)	2,180,000	2,028
Dutch East Indies (Outward only.)	4,440,000	20,400
Sandwich Islands	2,000,000	4,119
Philippine Islands	1,000,000	1,463
Australia	19,800,000	50,000
Value of cargoes	59,073,859	162,735
Value of ships	8,136,750	at $50 per ton.
Total value	$67,210,609	$8,136,750

Table showing the total tonnage that would pass yearly through the Atrato canal, if now finished, from official returns.

United States	1,857,485	tons
England	1,029,295	"
France	162,735	"
Other countries	44,555	"
Total	3,094,070	tons.

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Table showing the general results of the foregoing tables.

Tonnage and trade of United States	$193,168,937
" " England	190,649,750
" " France	67,210,609
" " other countries	16,802,000
Total trade affected by the canal	$467,831,296

Table showing the saving to the trade of the world by using the Atrato canal:

United States	$35,995,930
England	9,950,348
France	2,183,930
Other countries	*1,400,000
Total	$49,530,208

Exports of Great Britain increased one hundred and seven per cent. in ten years. Exports of France increased one hundred and thirty per cent. in ten years. Exports of the United States increased ninety-three per cent. in ten years. The average increase is one hundred and ten per cent. in ten years. If the trade increases one hundred per cent. in the next ten years, the saving to the world will then be $99,060,416 per annum.

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A summary of the estimated cost of the canal and appurtenances.

Works at the mouth of the Atrato	$550,800
Excavations under water in Truando	3,280,000
" at confluence of open cut and do	20,000
Excavation between confluence, as above, and Pacific, (excepting tunnel,) calling all the quantities rock, and estimating that the grubbing and clearing would be thus included	39,941,997
Tunnel $2, heading $10	12,701,920
Harbor at Kelley's Inlet	1,150,000
Light-house	35,000
Piers	55,000
Depots on Pacific	50,000
" on line, and Hospitals	35,000
Depot at Junction	15,000
Executive Department	120,000
Engineer Department	375,000
Medical Department	80,000
Pay Department	90,000
Commissary Department	120,000

* Equated from the trade of England, France, and the United States.

Quartermaster's Department	135,000
Dredging machinery	350,000
Hoisting and pumping engines and machinery	875,000
	58,949,717
Add 25 per cent. contingencies	14,737,424
Total	$73,687,141

The following table will show the money to be spent year by year, and the interest on each year's expenditure, as long as paid by the Governments, and the amount of interest-money to be paid each year:

	Spend.	*Pay interest at 5 per cent.*	
1st year	$3,000,000	$150,000 for 12 years	$1,800,000
2d "	5,000,000	250,000 for 11 "	2,750,000
3d "	8,000,000	400,000 for 10 "	4,000,000
4th "	9,000,000	450,000 for 9 "	4,050,000
5th "	9,000,000	450,000 for 8 "	3,600,000
6th "	9,000,000	450,000 for 7 "	3,150,000
7th "	9,000,000	450,000 for 6 "	2,700,000
8th "	11,000,000	550,000 for 5 "	2,750,000
9th "	12,000,000	600,000 for 4 "	2,400,000
Total cost	$75,000,000	Total interest	$27,200,000

NOTE.—I take pleasure in acknowledging my obligation to F. M. Kelley, Esq., for valuable information, and the statistics contained in my remarks and the appendix.